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Support for these amendments to the specification may be found in claims 1, 23, 24, 54, and 55 as originally filed.

REMARKS

Applicant wishes to thank the Examiner for kindly engaging in the telephonic interviews with the undersigned regarding this case. The following remarks reflect the outcome of the last teleconference with the Examiner.

The references cited in the Office Action are not available as prior art under 35 U.S.C. § 102(e) or otherwise. The earliest effective U.S. filing date of those references is October 26, 1999 (filing date of the CIP application) or, at the very earliest, December 4, 1998, depending on the subject matter added in the CIP application. Those filing dates are later than the September 17, 1998, U.S. priority date of this application. Applicant believes in good faith that the claims pending in this application are supported in the priority document (USAN 60/100,699).

Thus, the U.S. filing date of the cited references is not prior to the date of invention of the subject matter of this application.

As regards the finding of lack of unity under PCT Rule 13.1, the Examiner has not substantiated his conclusion that the product of Group I is not necessarily made by the process of Group II. Applicant submits that the subject matter of the process claims belongs to the same general inventive concept as that of the product claims in compliance with Rule 13.1 PCT, namely providing a thermoplastic polymer foam that is useful for acoustic absorption.

The fact that the international authority that searched and preliminarily examined this application did not find a lack of unity is substantial evidence that unity exists under the international standard applied by those authorities. Withdrawal of the lack of unity objection is requested.

Respectfully submitted,

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CLAIMS:

1. A cellular thermoplastic polymer foam having an average cell diameter of greater than 4 mm.
2. A cellular thermoplastic polymer foam having an average cell diameter of greater than 2 mm wherein greater than 50 percent of the cells have been opened by mechanical means.
3. A cellular thermoplastic polymer foam according to Claim 2 wherein the average cell diameter is greater than 3 mm.
4. A cellular thermoplastic polymer foam according to Claim 3 wherein the average cell diameter is greater than 4mm.
5. A cellular thermoplastic polymer foam having an airflow resistivity of less than 800,000 Rayls/m and an average cell diameter of greater than 2 mm, wherein greater than 50 percent of the cells have been opened by mechanical means.
6. A cellular thermoplastic polymer foam according to Claim 5 wherein the average cell diameter is greater than 3 mm.
7. A cellular thermoplastic polymer foam according to Claim 6 wherein the average cell diameter is greater than 4 mm.
8. A cellular thermoplastic polymer foam according to Claim 5 having an airflow resistivity of less than 400,000 Rayls/m.
9. A cellular thermoplastic polymer foam according to Claim 6 having an airflow resistivity of less than 400,000 Rayls/m.
10. A cellular thermoplastic polymer foam according to Claim 7 having an airflow resistivity of less than 400,000 Rayls/m.
11. A cellular thermoplastic polymer foam according to Claim 5 having an airflow resistivity of less than 100,000 Rayls/m.
12. A cellular thermoplastic polymer foam according to Claim 6 having an airflow resistivity of less than 100,000 Rayls/m.
13. A cellular thermoplastic polymer foam according to Claim 7 having an airflow resistivity of less than 100,000 Rayls/m.

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14. A cellular thermoplastic polymer foam according to Claim 5 having an airflow resistivity of less than 50,000 Rayls/m.

15. A cellular thermoplastic polymer foam according to Claim 6 having an airflow resistivity of less than 50,000 Rayls/m.

16. A cellular thermoplastic polymer foam according to Claim 7 having an airflow resistivity of less than 50,000 Rayls/m.

17. (Once Amended) A process for preparing a cellular thermoplastic polymer foam structure comprising the steps of:

a) providing a first cellular thermoplastic polymer foam structure with an average cell diameter of from 2 mm to 15 mm, wherein at least some portion of the cells thereof are closed-cells; and

b) applying a means for opening closed-cells in a cellular thermoplastic polymer foam to at least some portion of at least one surface of said first thermoplastic polymer foam structure, such application being sufficient to result in a cellular thermoplastic polymer foam structure having an average cell diameter of from 2 mm to 15 mm wherein greater than 50 percent of the cells have been opened by the application of the means for opening closed-cells in a cellular thermoplastic polymer foam.

18. A process according to Claim 17 wherein the first cellular thermoplastic polymer foam structure is substantially closed-celled.

19. A process according to Claim 17 wherein the first cellular thermoplastic polymer foam structure is substantially open-celled.

20. A process according to Claim 17 wherein the first cellular thermoplastic polymer foam structure has an average cell diameter of from 2 mm to 10 mm.

21. A process according to Claim 20 wherein the first cellular thermoplastic polymer foam structure has an average cell diameter of from 3 mm to 10 mm.

22. A process according to Claim 21 wherein the first cellular thermoplastic polymer foam structure has an average cell diameter of from 4 mm to 8 mm.

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23. A process according to Claim 17 wherein the first cellular thermoplastic polymer foam structure is prepared from an olefinic polymer.

24. A process according to Claim 23 wherein the olefinic polymer is selected from ethylenic polymers, copolymers, or blends thereof.

25. A process according to Claim 23 wherein the olefinic polymer is polypropylene.

26. (Once Amended) A process according to Claim 2325 wherein the olefinic polymer is a blend of polypropylene and an ethylene-styrene interpolymerthe thermoplastic polymer further comprise(s) polyethylene resin(s).

27. A process according to Claim 24 wherein the ethylenic polymer is a low density polyethylene.

28. (Once Amended) A process according to Claim 2426 wherein the ethylenic polymerpolyethylene resin(s) is a blend of comprise a low density polyethylene and an ethylene-styrene interpolymer.

29. (Once Amended) A process according to Claim 28 wherein the ethylene-styrene interpolymer has a styrene content of at least 60 percent by weight thermoplastic polymer further comprises an ethylenic copolymer and a low density polyethylene.

30. (Cancelled) A process according to Claim 28 wherein the blend of a low density polyethylene and an ethylene-styrene interpolymer contains at least 50 percent by weight of low density polyethylene.

31. A process according to Claim 17 wherein greater than 70 percent of the cells of the cellular thermoplastic polymer foam structure have been opened by the application of the means for opening closed-cells in a cellular thermoplastic polymer foam.

32. A process according to Claim 17 wherein greater than 90 percent of the cells of the cellular thermoplastic polymer foam structure have been opened by the application of the means for opening closed-cells in a cellular thermoplastic polymer foam.

33. A process according to Claim 17 wherein the cellular thermoplastic polymer foam structure has an airflow resistivity of less than 800,000 Rayls/m.

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34. A process according to Claim 33 wherein the cellular thermoplastic polymer foam structure has an airflow resistivity of less than 400,000 Rayls/m.

35. A process according to Claim 34 wherein the cellular thermoplastic polymer foam structure has an airflow resistivity of less than 100,000 Rayls /m.

36. A process according to Claim 35 wherein the cellular thermoplastic polymer foam structure has an airflow resistivity of less than 50,000 Rayls/m.

37. A process according to Claim 17 wherein said means for opening is selected from perforation, slicing, compression, or combinations thereof.

38. A process according to Claim 37 wherein said means for opening includes slicing.

39. A process according to Claim 37 wherein said means for opening includes compression.

40. A process according to Claim 39 wherein said means for opening is perforation followed by compression.

41. A process according to Claim 37 wherein said means for opening includes perforation.

42. A process according to Claim 41 wherein the perforation comprises one or more square patterns.

43. A process according to Claim 41 wherein the perforation is performed in a one or more triangular patterns.

44. A process according to Claim 41 wherein the means for opening is a compression followed by perforation.

45. A process according to Claim 41 wherein the perforation is performed in a manner which results in the perforations being spaced one from another at distances which are no greater than two times the average diameter of the cells within the first cellular thermoplastic polymer foam structure.

46. A process according to Claim 45 wherein the perforation is performed in a manner which results in the perforations being spaced one from

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another at distances which are no greater than 1.5 times the average diameter of the cells within the first cellular thermoplastic polymer foam structure.

47. A process according to Claim 46 wherein the perforation is performed in a manner which results in the perforations being spaced one from another at distances which are approximately equal to the average diameter of the cells within the first cellular thermoplastic polymer foam structure.

48. A process according to Claim 46 wherein the perforation is performed in a manner which results in the perforations being spaced one from another at distances which are less than the average diameter of the cells within the first cellular thermoplastic polymer foam structure.

49. A process according to Claim 41 wherein the perforation comprises puncturing the first cellular thermoplastic polymer foam structure with one or more pointed, sharp objects.

50. A process according to Claim 49 wherein the pointed, sharp objects is selected from needles, pins, spikes, or nails.

51. A process according to Claim 48 wherein the perforation comprises puncturing the first cellular thermoplastic polymer foam structure by drilling, laser cutting, high pressure fluid cutting, air guns, or projectiles.

52. A foam according to Claim 1 further comprising a fire retardant.

53. A foam according to Claim 1 wherein the foam has been formed into a profile having a low dynamic stiffness.

54. A foam according to Claim 1 wherein the foam is prepared from an olefinic polymer.

55. A foam according to Claim 54 wherein the olefinic polymer is selected from ethylenic polymers, copolymers, or blends thereof.

56. A foam according to Claim 54 wherein the olefinic polymer is polypropylene.

57. A process according to Claim 54 wherein the olefinic polymer is a blend of polypropylene and an ethylene-styrene interpolymers.

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58. (Once Amended) A process according to Claim 5531 wherein the ethylenic polymer is thermoplastic polymer comprise(s) a low density polyethylene combined with polypropylene and/or an ethylene copolymer.

59. (Once Amended) A process according to Claim 5524 wherein the ethylenic polymer is a blend of a low density polyethylene and an ethylene-styrene interpolymer.

60. (Once Amended) A process according to Claim 5958 wherein the ethylene-styrene interpolymer has a styrene content of at least 60 percent by weight cellular thermoplastic polymer foam structure has an average cell size greater than 4 mm.

61. (Once Amended) A process according to Claim 517 wherein the blend of a low density polyethylene and an ethylene-styrene interpolymer contains at least 50 percent by weight of low density polyethylene cellular thermoplastic polymer foam structure has an average cell size greater than 4 mm.

62. A foam according to Claim 53 wherein the profile is comprised of a core of cellular thermoplastic foam to which narrow strips of the same or a different cellular thermoplastic polymer foam have been attached alternately on opposite sides of the foam core.

63. A foam according to Claim 62 wherein the distances between the middle point of the narrow strips of cellular thermoplastic polymer foam are at least 250 mm.

64. A foam according to Claim 63 wherein the distances between the middle points of the narrow strips of cellular thermoplastic foam on the same side of the foam core are from 300 mm to 600 mm.

65. A foam according to Claim 53 wherein the profile is comprised of a core of cellular thermoplastic foam to which narrow strips of the same or a different cellular thermoplastic foam structure have been attached on the same side and at opposite ends of the foam core.

66. A foam according to Claim 65 wherein the distances between the middle points of the narrow strips are at least 350 mm.

67. A foam according to Claim 66 wherein the distances between the middle points of the narrow strips are between 450 mm to 600 mm.

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68. A foam according to Claim 2 wherein the foam has been formed into a profile having a low dynamic stiffness.

69. A foam according to Claim 68 wherein profile is comprised of a core of cellular thermoplastic foam to which narrow strips of the same or a different cellular thermoplastic polymer foam have been attached alternately on opposite sides of the foam core.

70. A foam according to Claim 69 wherein the distances between the middle point of the narrow strips of cellular thermoplastic polymer foam are at least 250 mm.

71. A foam according to Claim 70 wherein the distances between the middle points of the narrow strips of cellular thermoplastic foam on the same side of the foam core are from 300 mm to 600 mm.

72. A foam according to Claim 68 wherein the profile is comprised of a core of cellular thermoplastic foam to which narrow strips of the same or a different cellular thermoplastic foam structure have been attached on the same side and at opposite ends of the foam core.

73. A foam according to Claim 72 wherein the distances between the middle points of the narrow strips are at least 350 mm.

74. A foam according to Claim 73 wherein the distances between the middle points of the narrow strips are between 450 mm to 600 mm.

75. A foam according to any one of Claims 1 and 52 to 61, wherein the foam is obtainable by extruding a foamable gel, comprising the thermoplastic polymer having a blowing agent incorporated therein, through a die into a lower pressure zone which is at atmospheric or subatmospheric pressure.

76. (Once Amended) A process foam according to any one of Claims 1 and 52 to 61 Claim 17, wherein the cellular thermoplastic foam structure is an extruded foam made by extrusion, in which the cells are elongated, and the orientation of cell elongation is in the extrusion direction.

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77. (Once Amended) A process foam according to Claim 7660, which is closed celled wherein the cellular thermoplastic foam structure is an extruded foam in which the cells are elongated and the orientation of cell elongation is in the extrusion direction.

78. (Once Amended) A process foam according to any one of Claims 1 and 52 to 61 Claim 17, wherein the cellular thermoplastic polymer foam structure is in a coalesced strand form.

79. (Once Amended) A process foam according to any one of Claims 1, 52 to 61 Claim 60, wherein the cellular thermoplastic polymer foam structure is in a coalesced strand form which has a portion of previously closed cells opened by mechanical cell opening.

80. (Once Amended) A process foam according to any one of Claims 1 and 52 to 61 Claim 17, wherein the cellular thermoplastic polymer foam structure is in the form of non-crosslinked beads.

81. (Once Amended) A process according to Claim 17, wherein the cellular thermoplastic polymer foam structure has having an average cell diameter greater than 2 mm, and wherein greater than 50 percent of the cells have been opened by mechanical means measured according to ASTM D2856, Procedure C.

82. (Once Amended) A foam process according to any one of Claims 1 and 52 to 61 Claim 17, wherein the cellular thermoplastic polymer foam structure has been grafted with a vinyl functional silane or an azido functional silane.

83. (Once Amended) A foam process according to any one of Claims 1 and 52 to 61 Claim 82 further comprising crosslinking, wherein the cellular thermoplastic polymer foam structure has been crosslinked.